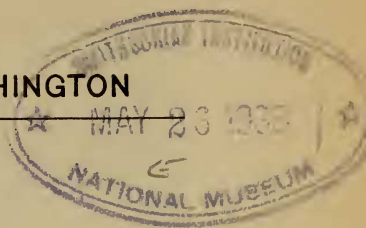


PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON



THE NOMENCLATURE AND TAXONOMY OF THE
GENERA OF THE SCARABAEID SUBFAMILY
GLAPHYRINAE.

BY EDWARD A. CHAPIN.¹

In rearranging the collections of Glaphyrinae of the United States National Museum it has been necessary to gather the information included in this paper. The questions concerning the nomenclature of the group are dealt with in the first part and the zoological considerations in the second.

PART 1. NOMENCLATURE.

The generic names which have been applied to the various suggested groupings of this subfamily are given below in chronological order.

1. *Glaphyrus* Latreille.

1802. *Hist. Nat. Crust. et Ins.*, vol. 3, p. 150.

Species included: *Melolontha serratulae* Fabricius 1792.

Genotype: *Melolontha serratulae* Fabr. 1792. Monobasic.

Remarks: This genus is usually dated from Latreille 1807, but in the 1802 work cited above a sufficient diagnosis is given and a species is cited. As the genus is monobasic, the type is automatically fixed. The designation of *Melolontha cardui* Fabricius 1787 as genotype (Latreille, 1810, *Considérations générales*, etc.) is invalid and has no binding effect. Name valid and in current use in its original sense.

2. *Amphicoma* Latreille.

1807. *Gen. Crust. et Ins.*, vol. 2, p. 118.

Species included: *Melolontha melis* Fabricius 1792 (with description), [*Melolontha*] *cyanipectus* [Fabricius 1801], [*Melolontha*] *hirta* [Fabricius 1792], [*Melolontha*] *vulpes* [Fabricius 1792], [*Melolontha*] *bombylius* [Fabricius 1787], [*Melolontha*] *vittata* [Fabricius 1775], (these five by specific name only), *Melolontha abdominalis* Fabricius 1781 (with description).

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Genotype: *Melolontha abdominalis* Fabr. 1781. Subsequent designation of Latreille 1810.

Remarks: The type of this genus was fixed by Latreille in 1810, *Considérations générales*, etc., and since the species was originally included in the genus and no type having previously been designated, the acceptance of this type fixation is obligatory under the International Code. Name valid but in current use in other than its nomenclaturally correct use.

3. *Anthypna* Eschscholtz.

1818. Mem. Acad. Imp. Sci. St. Petersburg, vol. 6, p. 472.

Species included: *Melolontha ursus* Fabricius 1775, *Melolontha bombyliiformis* Fabricius 1801 [= *bombyliiformis* Pallas 1781], *Melolontha arctos* Herbst 1790 [= *arctos* Pallas 1781], *Melolontha lynx* Fabricius 1776, *Melolontha crinita* Fabricius 1776, *Melolontha cyanipennis* Fabricius 1801, *Melolontha hirta* Fabricius 1792, *Melolontha vulpes* Fabricius 1792.

Genotype: *Melolontha cyanipennis* Fabricius 1801. Present designation.

Remarks: The first, fourth and fifth species listed above belong in the genus *Anisonyx* Latr. 1807 of the Melolonthinae. If any one of these is picked as type, the name will leave the Glaphyrinae and fall as a synonym of *Anisonyx* Latr. On the other hand, if any one of the remaining names is selected, the name stays in the Glaphyrinae and becomes synonymous with *Amphicoma* Latr. 1829, but not with *Amphicoma* Latr. 1807. There is no possible way under the International Code to maintain the name in its present sense. It seems best, all things considered, to keep the name in the Glaphyrinae and for that reason the writer selects the sixth of the contained species as genotype. With Latreille's 1810 type fixation for *Amphicoma*, Eschscholtz was entirely justified in proposing a new name for the then nameless portion of *Amphicoma* Latr. 1807, and if Latreille had not vacillated in his use of the name *Amphicoma*, there would be no conflict between the correct and the current usage of these names to-day. Name valid but in current use in other than its nomenclaturally correct use.

4. *Cratoscelis* Erichson.

1835. Arch. f. Naturg., vol. 1, part 1, p. 267.

Species included: *Cratoscelis vulpina* Erichson, n. sp., *Cratoscelis discolor* Erichson, n. sp.

Genotype: *Cratoscelis vulpina* Erichson 1835. Present designation.

Remarks: Unfortunately, the name *Cratoscelis* was published in connection with a figure and word description the preceding year (1834. Ann. Soc. Ent. France, vol. 3, p. 361, pl. 7, figs. 3-4) by Lucas. Name invalid, see *Arctodium* Burmeister 1844.

5. *Lichnia* Erichson.

1835. Arch. f. Naturg., vol. 1, part 1, p. 269.

Species included: *Lichnia limbata* Erichson, n. sp.

Genotype: *Lichnia limbata* Erichson 1835. Monobasic.

Remarks: Name valid and in current use in its original sense.

6. *Pachymerus* Faldermann.

1835. Mem. Soc. Nat. Moscou, vol. 4, p. 281.

Species included: *Pachymerus micans* Faldermann, n. sp., *Scarabaeus oxypterus* Pallas 1771.

Genotype: *Pachymerus micans* Faldermann 1835. Present designation.

Remarks: This name is preoccupied by *Pachymerus* Thunberg 1805 and hence is invalid in this sense. Furthermore, both of the included species belong in the older genus *Glaphyrus* Latr. 1802. Name invalid, see *Glaphyrus* Latr. 1802.

7. *Arctodium* Burmeister.

1844. Handb. d. Ent., vol. 4, part 1, p. 9.

Species included: Those belonging to *Cratoscelis* Erichson 1835, to wit, *Cratoscelis vulpina* Erichson 1835, *Cratoscelis discolor* Erichson 1835.

Genotype: *Cratoscelis vulpina* Erichs. 1835. By substitution.

Remarks: Although proposed by Dejean in his 1833 Catalogue, it remained for Burmeister to validate the name by connecting it with a described species. It is the only available substitute for *Cratoscelis* Erichson 1835 nec *Cratoscelis* Lucas 1834. Name valid and should replace *Cratoscelis* Erichs.

8. *Lichnanthe* Burmeister.

1844. Handb. d. Ent., vol. 4, part 1, p. 26.

Species included: *Amphicoma vulpina* Hentz 1826.

Genotype: *Amphicoma vulpina* Hentz 1826. Monobasic.

Remarks: Name valid nomenclaturally and available for use.

9. *Psilodema* Blanchard.

1845. Hist. d. Ins., vol. 1, p. 211, 235.

Species included: *Melolontha melis* Fabricius 1792.

Genotype: *Melolontha melis* Fabr. 1792. Monobasic.

Remarks: Isogenotypic, through synonymy, with *Anthypna* Eschz. 1818. Name invalid, see *Anthypna* Eschz. 1818.

10. *Dasychaeta* Erichson.

1847. Arch. f. Naturg., vol. 13, part 1, p. 104.

Species included: *Dasychaeta lateralis* Erichson, n. sp.

Genotype: *Dasychaeta lateralis* Erichs. 1847. Monobasic.

Remarks: Name valid and in current use in its original sense.

11. *Eulasia* Truqui.

1848. Studi entomologici, vol. 1, part 1, p. 16.

Species included: *Amphicoma papaveris* Sturm. 1843, *Melolontha vittata* Fabricius 1775, *Amphicoma goudoti* Castelnau 1840, *Amphicoma lasserrei* Gemar 1834, *Melolontha bombylius* Fabricius 1787, *Eulasia genei* Truqui, n. sp., *Eulasia pretiosa* Truqui, n. sp., *Scarabaeus arctos* Pallas 1781, *Scarabaeus bombyliiformis* Pallas 1781, *Amphicoma bicolor* Walzl. 1838, *Eulasia hyrax* Truqui, n. sp., *Melolontha vulpes* Fabricius 1792, *Scarabaeus syriacus* Linne. 1758.

Genotype: *Amphicoma papaveris* Sturm. 1843. Present designation.

Remarks: In subdividing the genus *Amphicoma* of authors (nec *Amphicoma* Latreille 1807), Truqui correctly assigned the name to those species with simple mandibles. For the species with dentate mandibles he proposed the new name *Eulasia*. Name valid and in use in its original sense though reduced to subgeneric rank.

12. *Pygopleurus* Motschulsky.

1859. *Etudes ent.*, part 8, p. 162.

Species included: *Scarabaeus syriacus* Linne. 1758, *Melolontha vulpes* Fabricius 1792.

Genotype: *Melolontha vulpes* Fabricius 1792. Present designation.

Remarks: Motschulsky suggests the division of *Amphicoma* Latr. 1829 into four genera. The species referred to *Pygopleurus* fall into the second section of Truqui's genus *Eulasia*, having tridentate mandibles. An additional character not mentioned by Motschulsky is found in the shape of the scutellum. Name valid and in current use as a subgenus of *Amphicoma* Latr. 1829.

13. *Trichopleurus* Motschulsky.

1859. *Etudes ent.*, part 8, p. 162.

Species included: *Melolontha bombylius* Fabricius 1787.

Genotype: *Melolontha bombylius* Fabr. 1787. Monobasic.

Remarks: Nomenclaturally valid but zoologically hardly distinct from *Eulasia* Truqui 1848.

14. *Dasydera* Leconte.

1861. *Proc. Acad. Nat. Sci. Philadelphia*, p. 345.

Species included: *Dasydera ursina* Leconte, n. sp.

Genotype: *Dasydera ursina* Lec. 1861. Monobasic.

Remarks: Nomenclaturally valid but zoologically hardly distinct from *Lichnanthe* Burm. 1844.

15. *Toxocerus* Fairmaire.

1891. *C. R. Soc. ent. Belgique*, vol. 35, p. vii.

Species included: *Toxocerus rothschildi* Fairmaire, n. sp.

Genotype: *Toxocerus rothschildi* Fairm. 1891. Monobasic.

Remarks: This genus was differentiated from *Anthypna* auct. by the much greater development of the antennal club. Since its description more species have come to light which tend to bridge the gap between the types. Name nomenclaturally valid but zoologically hardly distinct from *Amphicoma* Latr. 1807 (= *Anthypna* auct. nec Eschz.).

16. *Arrhephora* Fairmaire.

1891. *C. R. Soc. ent. Belgique*, vol. 35, p. viii.

Species included: *Arrhephora chalconchrysea* Fairmaire, n. sp. *Arrhephora dolorosa* Fairm., n. sp., *Arrhephora corinthia* Fairm., n. sp.

Genotype: *Arrhephora chalconchrysea* Fairm. 1891. Present designation.

Remarks: With additional material before him, Fairmaire suppressed this genus as a synonym of *Toxocerus*. Name valid nomenclaturally but zoologically hardly distinct from *Amphicoma* Latr. 1807 (= *Anthypna* auct. nec Eschz.).

17. Hemiglaphyrus Champenois.

1903. L'Abeille, vol. 30, p. 145.

Species included: *Glaphyrus caucasicus* Kraatz 1882, *Glaphyrus modestus* Kiesenwetter 1858.

Genotype: *Glaphyrus caucasicus* Kraatz 1882. Present designation.

Remarks: Name valid and in current use as a subgenus of *Glaphyrus* Latr. 1802.

18. Solskiola Semenov.

1903. Revue Russe d'Ent., vol. 3, p. 391.

Species included: *Amphicoma analis* Solsky 1876.

Genotype: *Amphicoma analis* Solsky 1876. Monobasic.

Remarks: Name valid and in current use as a subgenus of *Anthypna* Eschz. 1818 (= *Amphicoma* Latr. 1829 et auct.).

19. Eoglaphyrus Semenov.

1926. Revue Russe d'Ent., vol. 20, p. 51.

Species included: *Glaphyrus turkestanicus* Sem. 1889 (= *Glaphyrus sogdianus* Sem. 1892), *Glaphyrus turkestanicus* bicolor Sem. (new name for *sogdiana* Champ., Rtrr.).

Genotype: *Glaphyrus turkestanicus* Sem. 1889. Present designation.

Remarks: Name valid and in current use as a subgenus of *Glaphyrus* Latr. 1802.

The following is a summary of the valid names in the Glaphyrinae, with synonymy:

1. Genus *Lichnia* Erichson 1835.

No subgenera; no synonyms.

2. Genus *Arctodium* Burmeister 1844.

No subgenera; synonym *Cratoscelis* Erichson 1835, not Lucas 1834.

3. Genus *Dasychaeta* Erichson 1847.

No subgenera; no synonyms.

4. Genus *Glaphyrus* Latreille 1802.

Subgenus *Glaphyrus* s. str.; synonym *Pachymerus* Faldermann 1835.

Subgenus *Hemiglaphyrus* Champenois 1903; no synonyms.

Subgenus *Eoglaphyrus* Semenov 1926; no synonyms.

5. Genus *Anthypna* Eschscholtz 1818.

Subgenus *Anthypna* s. str.; synonym *Amphicoma* Latreille 1829, not Latreille 1807, *Psilodema* Blanchard 1845.

Subgenus *Eulasia* Truqui 1848; synonym *Trichopleurus* Motschulsky 1859.

Subgenus *Pygopleurus* Motschulsky 1859; no synonyms.

Subgenus *Solskiola* Semenov 1903; no synonyms.

6. Genus *Amphicoma* Latreille 1807.

No subgenera; synonyms *Anthypna* Latreille 1829, not Eschscholtz 1818, *Toxocerus* Fairmaire 1891, *Arrhophora* Fairmaire 1891.

PART 2. TAXONOMY.

Subfamily Glaphyrinae.

Diagnosis: Scarabaeidae with seven (Lichnini) or eight (Glaphyrini) pairs of functional abdominal¹ spiracles, the eighth pair, when present, situated on the pygidium; with nine-segmented (Lichnini) or ten-segmented (Glaphyrini) antennae, the last three segments enlarged to form an ovate or elongate club; with well developed corneous mandibles which, with the labrum, are horizontally extended; abdominal sternites ankylosed (Lichnini) or free (Glaphyrini); abdomen not (Lichnini) or strongly (Glaphyrini) inflated, body generally pilose.

From the above it may be seen that the South American components of the subfamily (Lichnini) are quite different from the group of genera native to the northern hemisphere (Glaphyrini). It would not be unreasonable to consider that the two groups are both of subfamily rank. Since, however, the two seem to be more closely related to one another than to any other of the numerous subfamilies, little would be gained by their separation.

Through the Glaphyrini, the subfamily appears to be most closely related to the Hybosorinae. In certain of the species of *Glaphyrus* Latr. the antennal structure typical of the Hybosorinae is found and the presence of a pair of functional spiracles on the pygidium in both groups seems significant. In fact, the only character that the writer can find by which the Glaphyrini can be separated from all of the Hybosorinae, other than that of pilosity which is relative, is in the inflated abdomen with free sternites. On the other hand, the Lichnini are separable from both groups by the nine-segmented antennae. The Lichnini appear most closely related to the Glaphyrini through *Amphicoma* Latr.

KEY TO THE GENERA AND SUBGENERA OF GLAPHYRINAE.

- | | |
|---|------------------------|
| 1. Antennae nine-segmented (Tribe Lichnini)..... | 2 |
| Antennae ten-segmented (Tribe Glaphyrini)..... | 4 |
| 2. Eyes not completely divided by canthus; maxilla short..... | |
| | <i>Dasychaeta</i> Er. |
| Eyes completely divided by canthus..... | 3 |
| 3. Maxilla elongate, filiform, about half as long as entire body..... | |
| | <i>Lichnia</i> Er. |
| Maxilla not much longer than maxillary palpus..... | <i>Arctodium</i> Burm. |
| 4. Segments of anterior tarsus of male pectinate..... | 5 |
| Segments of anterior tarsus of male not pectinate..... | 8 |
| 5. Anterior tibia of male armed on inner margin before apex with a
long perpendicular spine..... | <i>Solskiola</i> Sem. |
| Anterior tibia of male not so armed..... | 6 |

¹Arrow (1909, Trans. Ent. Soc. London, p. 481) considers the first and largest of the series of spiracles as belonging to the metathorax. The writer prefers to consider it as the first abdominal for the following reasons: (1) the metathoracic spiracle in coleopterous larvae is always, as far as he can ascertain, rudimentary and should not logically be followed in the imago by a fully functional spiracle and (2) there is otherwise no spiracle to correspond with the first abdominal segment.

- 6 Mandibles depressed, simple, evenly curved externally and apically.....*Anthypna* Esch.
Mandibles depressed, bifid or trifid along inner apical margin.....7
7. Scutellum elongate-triangular.....*Pygopleurus* Mots.
Scutellum short, rounded behind.....*Eulasia* Truqui
8. Mandibles compressed, apically bifid; each segment of anterior tarsus of male edged with row of stiff spines.....9
Mandibles depressed, evenly curved, the external margin sometimes strongly elevated.....11
9. All segments of antennal club equally developed, free.....
Hemiglaphyrus Champ.
Basal segment of antennal club cupuliform, receiving the other club segments within its cavity.....10
10. Epipleural margin of elytron sharp, cariniform.....*Eoglaphyrus* Sem.
Epipleural margin of elytron costiform.....*Glaphyrus* Latr.
11. External margin of mandible not strongly elevated, mandible obliquely carinate dorsally; first four segments of anterior tarsus of male lamellate internally.....*Amphicoma* Latr.
External margin of mandible strongly elevated, mandible not carinate dorsally; anterior tarsus of male not modified.....
Lichnanthe Burm.

Lichnini, new tribe.

Diagnosis: Glaphyrinae with filiform, plumose maxillae which are sometimes very elongate, with nine-segmented antennae, with seven pairs of functional abdominal spiracles and with the abdominal sternites ankylosed.

Distribution: South America (Peru and Chile).

Of the three genera which compose this tribe, two are available to the writer for study. These are readily separated, but by characters which seem upon study to be rather trivial. The discovery of additional species in the future may give reason for merging them. The third genus, *Dasychaeta* Er., unknown to me except by description, offers one character which suggests that the genus may be a connecting link between the Lichnini and the Glaphyrini. This is the incomplete division of the eye by the canthus.

Glaphyrini, new tribe.

Diagnosis: Glaphyrinae with truncate maxillae, with ten-segmented antennae, with eight pairs of functional spiracles, with the abdomen inflated and with free sternites.

Distribution: southern portion of the northern hemisphere.

This tribe embraces four genera, each of which has in the past been subdivided. Two of these are palaeartic in range, one is both palaeartic and oriental and one purely nearctic.

Glaphyrus Latr.—This genus is here considered as made up of three groups of subgeneric rank. *Hemiglaphyrus* Champenois might quite legitimately be raised to full generic status as the characters suggested

indicate a transitional form in the direction of *Amphicoma* Latr. *Eoglyphyrus* Semenov appears to be less well grounded, only one of the mentioned characters serving to set it off from the rest of the genus and this character not one of great weight. However, without study of the actual type species the writer accepts Semenov's conclusion.

Anthypna Esch.—Four groups of subgeneric rank are here accepted as composing this genus. *Pygopleurus* Motschulsky and *Eulasia* Truqui are distinct from each other and from *Anthypna* s. str. in both sexes and appear to be well grounded. *Solskiola* Semenov is based on a single character found only in the male sex of a single species. Without a knowledge of the structure of the mandible, one is at a loss to assign it to its proper subgenus and it is hence left as described. It is probably an *Eulasia*.

Amphicoma Latr.—The outstanding characters of this genus are the dorsally carinate mandibles and the modifications of the anterior tarsi and intermediate tibiae of the males. Four species of *Toxocerus* Fairm. are before the writer, as well as *A. pectinata* Lewis and the two Mediterranean species. It seems impossible to find valid characters to sustain *Toxocerus* Fairm. so that genus has been merged with *Amphicoma* Latr.

Lichnanthe Burm.—All of the known nearctic forms are referable to this genus.